Amendments to the Claims

1. (Currently Amended) A method for changing a frequency in a radio optical fusion communication system including a base station and a remote antenna station, the base station being adapted to generate ~~generating~~ a modulated radio signal, to electro-optically ~~converting~~ convert the generated signal into an optical signal while the modulation mode is kept, and to transmit ~~transmitting~~ the converted signal to the remote antenna station over an optical fiber path, the remote antenna station being adapted to opto-electrically ~~converting~~ convert the received optical signal to extract the modulated radio signal and transmitting the signal through an antenna by radio, the base station including a first light source and a second light source for generating optical signals of different frequencies, an intermediate-frequency signal generating means for generating a modulating signal at an intermediate frequency band, a modulator for modulating the optical signal from the first light source into an unsuppressed-carrier single-sideband (SSB) or double-sideband (DSB) modulated optical signal using the intermediate-frequency signal, and an optical mixer for mixing the modulated optical signal with the optical signal from the second light source to obtain an optical transmission signal, the method comprising:

~~the step of:~~ controlling the frequency of at least one of the optical signals from the first and second light sources so that the difference in frequency between the optical signals is a desired frequency of the modulated radio signal, and ~~thereby being switched~~ the frequency channel of the modulated radio signal extracted by the remote antenna station is switched.

2. (Currently amended) The method for changing a frequency in the radio optical fusion communication system according to claim 1, further comprising:

shifting ~~wherein~~ the frequency of the optical signal from at least one of the first and second light sources ~~is shifted~~ through an optical frequency shifter provided downstream of the light source.

3. (Currently Amended) ~~The method for changing a frequency in the radio optical fusion communication system according to claim 2,~~

A method for changing a frequency in a radio optical fusion communication system including a base station and a remote antenna station, the base station being adapted to generate a modulated radio signal, to electro-optically convert the generated signal into an optical signal while the modulation mode is kept, and to transmit the converted signal to the remote antenna station over an optical fiber path, the remote antenna station being adapted to opto-electrically convert the received optical signal to extract the modulated radio signal and transmitting the signal through an antenna by radio, the base station including a first light source and a second light source for generating optical signals of different frequencies, an intermediate-frequency signal generating means for generating a modulating signal at an intermediate frequency band, a modulator for modulating the optical signal from the first light source into an unsuppressed-carrier single-sideband (SSB) or double-sideband (DSB) modulated optical signal using the intermediate-frequency signal, and an optical mixer for mixing the modulated optical signal with the optical

signal from the second light source to obtain an optical transmission signal, the method comprising:

controlling the frequency of at least one of the optical signals from the first and second light sources so that the difference in frequency between the optical signals is a desired frequency of the modulated radio signal, and the frequency channel of the modulated radio signal extracted by the remote antenna station is switched.

shifting the frequency of the optical signal from at least one of the first and second light sources through an optical frequency shifter provided downstream of the light source,

wherein the optical frequency shifter has optical waveguides including a main Mach-Zehnder integrated with two sub Mach-Zehnders, and

driving the optical frequency shifter ~~is driven~~ in accordance with a predetermined frequency oscillation signal for determination of the amount of frequency shift, and the frequency is shifted as much as the frequency of the oscillation signal by changing a voltage applied to the optical frequency shifter such that the optical waveguides have predetermined phase differences therebetween.

4. (Currently Amended) The method for changing a frequency in the radio optical fusion communication system according to claim 3, further comprising:

setting wherein the predetermined phase difference between the waveguides in each sub Mach-Zehnder ~~is set~~ to +.pi. or -.pi., and

applying a voltage ~~is applied~~ such that the predetermined phase difference between the waveguides in the main Mach-Zehnder is reversed between +.pi./2 and -.pi./2, and the frequency of

the optical signal from the light source is shifted in each of upper and lower sidebands as much as the predetermined frequency to obtain the amount of frequency shift that is twice as much as the predetermined frequency.

5. (Currently Amended) The method for changing a frequency in the radio optical fusion communication system according to claim 3, further comprising:

setting ~~wherein~~ the predetermined phase difference between the waveguides in the main Mach-Zehnder ~~is set~~ to +.pi./2 or -.pi./2, and

applying a voltage ~~is applied~~ such that the predetermined phase difference between the waveguides in each sub Mach-Zehnder is reversed between +.pi. and -.pi., and the frequency of the optical signal from the light source is shifted in each of upper and lower sidebands as much as the predetermined frequency to obtain the amount of frequency shift that is twice as much as the predetermined frequency.

6. (Original) The method for changing a frequency in the radio optical fusion communication system according to any one of claims 3 to 5, wherein the applied voltage includes a pulse train having a predetermined pulse frequency, pulse pattern, and pulse voltage to hop the frequency of the modulated radio signal.

7. (Currently Amended) The method for changing a frequency in the radio optical fusion communication system according to any one of claims 3 to 5, further comprising:

hopping ~~wherein~~ the predetermined frequency oscillation signal for determination of the amount of frequency shift ~~is hopped~~ to hop the frequency of the modulated radio signal.

8.(Currently Amended) A base station in a radio optical fusion communication system that includes the base station and a remote antenna station, the base station ~~generating~~ being adapted to generate a modulated radio signal, to electro-optically ~~converting~~ convert the generated signal into an optical signal while the modulation mode is kept, and to transmit ~~transmitting~~ the converted signal to the remote antenna station over an optical fiber path, the remote antenna station being adapted to opto-electrically ~~converting~~ convert the received optical signal to extract the modulated radio signal and to transmit ~~transmitting~~ the signal through an antenna by radio, the base station comprising: a first light source and a second light source for generating optical signals of different frequencies; an intermediate-frequency signal generating means for generating a modulating signal at an intermediate frequency band; a modulator for modulating the optical signal from the first light source into an unsuppressed-carrier single-sideband (SSB) or double-sideband (DSB) modulated optical signal using the intermediate-frequency signal; an optical mixer for mixing the modulated optical signal with the optical signal from the second light source to obtain an optical transmission signal; and control means ~~capable of~~ for controlling the frequency of at least one of the optical signals from the first and second light sources so that the difference in frequency between the optical signals is a desired frequency of the modulated radio signal and the frequency channel of the modulated radio signal extracted by the remote antenna station is switched.

9. (Original) The base station in the radio optical fusion communication system according to claim 8, further comprising: an optical frequency shifter, provided downstream of at least one of the first and second light sources, for shifting the frequency of the optical signal from the light source.

10. (Currently Amended) ~~The base station in the radio optical fusion communication system according to claim 9,~~

A base station in a radio optical fusion communication system that includes the base station and a remote antenna station, the base station being adapted to generate a modulated radio signal, to electro-optically convert the generated signal into an optical signal while the modulation mode is kept, and to transmit the converted signal to the remote antenna station over an optical fiber path, the remote antenna station being adapted to opto-electrically convert the received optical signal to extract the modulated radio signal and to transmit the signal through an antenna by radio, the base station comprising: a first light source and a second light source for generating optical signals of different frequencies; an intermediate-frequency signal generating means for generating a modulating signal at an intermediate frequency band; a modulator for modulating the optical signal from the first light source into an unsuppressed-carrier single-sideband (SSB) or double-sideband (DSB) modulated optical signal using the intermediate-frequency signal; an optical mixer for mixing the modulated optical signal with the optical signal from the second light source to obtain an optical transmission signal; control means for controlling the frequency of at least one of the

optical signals from the first and second light sources so that the difference in frequency between the optical signals is a desired frequency of the modulated radio signal and the frequency channel of the modulated radio signal extracted by the remote antenna station is switched, and an optical frequency shifter, provided downstream of at least one of the first and second light sources, for shifting the frequency of the optical signal from the light source,

wherein the optical frequency shifter has optical waveguides including a main Mach-Zehnder integrated with two sub Mach-Zehnders, each sub Mach-Zehnder includes an electrode which is supplied predetermined oscillation signal and voltage for determination of the amount of frequency shift, the main Mach-Zehnder includes an electrode which is supplied predetermined voltage,

wherein the optical frequency shifter is adapted to be driven in accordance with a predetermined frequency oscillation signal for determination of the amount of frequency shift, and

wherein the frequency is adapted to be shifted as much as the frequency of the oscillation signal by changing a voltage applied to the optical frequency shifter such that the optical waveguides have predetermined phase differences therebetween.

11. (Currently Amended) The base station in the radio optical fusion communication system according to claim 10, wherein the predetermined phase difference between the waveguides in each sub Mach-Zehnder is set to +.pi. or -.pi., further comprising:

means for applying a voltage ~~is applied~~ such that the predetermined phase difference between the waveguides in the main Mach-Zehnder is reversed between +.pi./2 and -.pi./2, and the

frequency of the optical signal from the light source is shifted in each of upper and lower sidebands as much as the predetermined frequency to obtain the amount of frequency shift that is twice as much as the predetermined frequency.

12. (Currently Amended) The base station in the radio optical fusion communication system according to claim 10, wherein the predetermined phase difference between the waveguides in the main Mach-Zehnder is set to +.pi./2 or -.pi./2, further comprising:

means for applying a voltage ~~is applied~~ such that the predetermined phase difference between the waveguides in each sub Mach-Zehnder is reversed between +.pi. and -.pi., and the frequency of the optical signal from the light source is shifted in each of upper and lower sidebands as much as the predetermined frequency to obtain the amount of frequency shift that is twice as much as the predetermined frequency.

13. (Original) The base station in the radio optical fusion communication system according to any one of claims 10 to 12, wherein the applied voltage includes a pulse train having a predetermined pulse frequency, pulse pattern, and pulse voltage to hop the frequency of the modulated radio signal.

14. (Currently Amended) The base station in the radio optical fusion communication system according to any one of claims 10 to 12, further comprising:

~~wherein~~ means for hopping the predetermined frequency oscillation signal for determination

of the amount of frequency shift ~~is hopped~~ to hop the frequency of the modulated radio signal.